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ABSTRACT

The evaluation of systemic educational reforms entails a paradigm shift among evaluators who must change the lens through which they look at the reforms. This paper proposes methodological and design alternatives to measure nontraditional outcomes, such as changes in policy, over the lifespan of the reforms. Systemic reforms include intended and unintended outcomes and the actual outcomes that result. Outcomes of educational reform can also be organized in terms of whether they result from top-down or bottom-up approaches. A research approach to measuring reform outcomes will be more methodologically sound if the variables of interest are measured in multiple ways. By comparing findings using multiple qualitative and quantitative data collection strategies, evaluators can identify trends and lead reformers to midcourse corrections when needed. By defining outcomes and measuring those outcomes, evaluators and reformers will be driving the reforms. (Contains 17 references.) (SLD)

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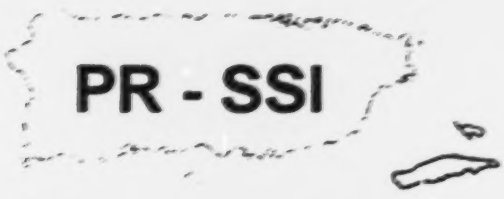

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Measuring and Documenting Outcomes: Going Beyond Tradition in Program Evaluation

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Overview

One of the main reasons for looking at systemic educational reform from an evaluation perspective is to determine what happens as a result of these interventions In this very high stakes process, different players within the reform as well as outside of it are interested in finding out if their investments in terms of time as well as financial and human resources are really producing measurable change. However, since systemic educational reform takes place in an everchanging environment, the evaluator must look beyond casual relationships and traditional definitions and methodologies when examining the outcomes of such a program.

An evaluator of systemic educational reforms should address what happens to and within the unit of change targeted by the reform; this unit of change could be defined as the teacher, the classroom, the school or the university to name a few possible options. Each one of these units of change will require a different level of intervention to collect data and a different level of analysis to reach valid conclusions that will be useful to participants as well as to stakeholders. Each one of these units of change will require a different evaluation design particularly as the reforms by their own systemic nature require the study of the changes that occur within all major elements of the system being transformed as well as within some of the other systems that are interrelated with the target system as part of their evaluation. Therefore, the evaluator's use of multiple approaches and methodologies is highly advisable (Datta, 1997).

The evaluation of systemic educational reforms entails a paradigm shift among evaluators who must change the lens which they use to look at these reforms. Examples of non-traditional outcomes such as changes in educational policy, leveraging of resources formation of partnerships, increases in parent involvement, level of participant empowerment are a few of the variables of interest to evaluators of systemic educational reforms that will be discussed here. Methodological and design alternatives to measure these variables over the lifespan of the reforms through innovations such as coordinated series of studies will be proposed in this paper (see Caracelli & Greene, 1997).

Definition of Outcomes and Outcome Variables

Weiss (1998) describes outcomes as "the end results of the program for the people it was intended to serve" (p.8) and further elaborates that outcomes are interchangeable with results and effects. Outcomes are certainly an end result of systemic educational reforms as well as of many other types of programs, but the nature and context of these initiatives requires a wider definition. For example, in systemic educational reforms, outcomes can be evident at the level of the classroom, school, district, or state. Evaluators of systemic educational reforms are usually interested in connections between different levels of interventions and outcomes as well as in factors that contributed to the occurrence of those outcomes.

Because of the additional dimensions of systemic educational reforms that differentiate these programs from other educational interventions, distinctions between outcome variables and outcomes need to be established. In systemic educational reform, an outcome variable is a quantity, dimension, or quality of the system subject to change because of the initiative. A systemic variable is an outcome variable that can be measured across the system such as student academic achievement in Science and Mathematics. In turn, an outcome for a systemic initiative is a change in an outcome variable directly attributable or likely attributable to the initiative such as improvements in student learning as a result of participation in standards-based instruction in Science and Mathematics.

Outcomes can be organized into three different types: (1) intended, unintended, and actual; (2) main effects (i.e., changes in one variable); and (3) mixed effects (i.e., changes in the interaction among two or more variables). The following section introduces the reader to this classification.

Types of Outcomes in Systemic Educational Reform

In the design of any systemic reform, the initiative usually stipulates a series of outcomes that it wishes to achieve within a specific time period given its goals and objectives. Three examples of possible **intended** outcomes from Science and Mathematics educational reforms are: (1) showing measurable increases in student academic achievement in Science and Mathematics; (2) having a predetermined number of schools fully implementing a standards-based reform; and (3) increasing communication between management and governance structures. However, regardless of how well a systemic reform plans its interventions and sets out its goals and objectives, it may not achieve all of its intended outcomes or, instead, it may attain other **unintended** outcomes which may become windows of opportunity to refocus the reform and its evaluation. Whether they were intended or unintended, the evaluator of systemic reform works with the **actual** outcomes of the reform being studied.

Measuring **main effect** outcomes entails that the evaluator establishes a clear connection between the reform and a particular outcome variable. In contrast, **mixed effects** outcomes requires that the evaluator understands the different factors that are contributing to the presence of particular outcome variables. Given the dynamic and complex nature of systemic reforms and of the context where they are being implemented, most evaluators spend most of their time working with mixed effects outcomes. However, they will very likely find that the same outcomes can be considered main effects in some initiatives and mixed effects in other initiatives depending on how they were measured. A clear definition of the initiative's unit of change and of analysis is necessary to understand these outcomes appropriately.

Determining Units of Change and Analysis

The transformation of the educational systems is, by design, the ultimate intended outcome of systemic educational reform. From this perspective, the unit of change of these reforms should be defined as the entire educational system regardless of whether this system is a state, city, or district. However, several major issues which are unique to systemic educational reforms pose significant dilemmas to systemic reformers in choosing the entire system as the unit of change of these reforms. These issues are: (1) the magnitude and complexity of the proposed task; (2) the unavailability of resources commensurate with the task; and (3) the risks involved in intervening in the system in its entirety without first pilot testing interventions at a smaller scale (Gómez, 1997). Therefore, reformers need to design strategies to have an impact on the entire system without working with the entire system at once. At the same time, evaluators need to work with reformers to: (1) identify a unit of change that will facilitate the transformation of the system while starting small and scaling-up; (2) measure such a major multi-dimensional transformation; and (3) select a unit of analysis within that unit of change.

The identification of a systemic reform's outcomes will depend mainly on the overall goals and objectives of the initiative. The unit of change will be the focus of the reform and, consequently, of its evaluation. In addition, outcomes obtained at the unit of change will be interpreted differently depending on the unit of analysis that has been selected to answer a particular evaluation question. The following section presents some examples of outcomes of systemic educational reform of interest to evaluators.

Key Outcomes in Systemic Educational Reform

Outcomes of systemic educational reforms can be organized in terms of whether they are the result of top-down or bottom-up approaches. Top-down approaches entail changes at the legislative and policy levels while bottom-up approaches refer to changes occurring at the grassroots level such as schools.

Educational policy is a top-down outcome of interest to evaluators because it is highly interrelated with other aspects of the reforms. Educational policy is necessary but not sufficient to achieve true systemic change because "connections between policy alignment and school change are the black box of systemic reform" (Zucker & Shields, 1998; p.8). Evaluators working with changes in educational policy may need to differentiate which policies can be attributed directly to the reform and which ones can be windows of opportunity to enable the implementation of the reform. Some examples of educational policy of interest to evaluators are: (1) shared vision of quality Science and Mathematics education at the state or district levels; (2) standards, curricula, and strategic planning for quality Science and Mathematics education at the state or district levels; (3) laws, regulations, and monitoring procedures for special populations in

the areas of equity, fairness, and accommodations at the state or district levels; and (4) administration of Federal programs such as Title I and Title II consistent with quality Mathematics and Science programs at the state and district levels.

Changes taking place at the school level are examples of bottom-up changes. When initiatives are being truly systemic, the transformations that they pursue surpass the limits of the classroom and encompass the school as a whole. The sustainability of the reform is more likely to be supported when the culture of a school is changed because the participants will be less likely to return to previous patterns of behavior and communication. Since the sociological literature defines culture as the attitudes, beliefs, values, expectations, knowledge, opportunities, and materials of a group (Chinoy & Hewitt 1975; Federico, 1975; Remmling & Campbell, 1970), an evaluator could expect to find changes in elements of this definition which could be considered outcomes of systemic educational reform at the school level.

Evaluators may choose to obtain information on variables such as the ones presented below as baseline measures against which to compare changes after the systemic educational reform has been implemented. These variables are discussed in further detail in the book about the evaluation of systemic educational reforms from which this paper was adapted.

1. Percent of qualified staff teaching Science and Mathematics.
2. Degree of shared beliefs and logic of action for teaching Science and Mathematics among the teaching staff.
3. Availability of quality curricula and review processes for Mathematics and Science.
4. Use of standards-based teaching and learning and assessment strategies in Science and Mathematics.
5. Existence of communities of learners among Science and Mathematics teaching staff and other members of the school communities.
6. Hours of standards-based professional development experiences for Science and Mathematics teaching staff.
7. Level of empowerment (i.e., autonomy, accountability, decision-making opportunities, collegiality and collaboration, mastery of content, self-assessment, and institutional support among other elements) of teachers of Science and Mathematics.
8. Expenditures per student for Science and Mathematics.
9. Availability of materials and equipment for Science and Mathematics instruction.
10. Level of participation of parents and community in Mathematics and Science education.
11. Level of academic entrepreneurship (i.e., school-initiated outreach efforts to obtain additional human and fiscal resources to support and sustain the reform) in building and maintaining quality Mathematics and Science instruction.

12. Existence of partnerships with community organizations to leverage resources and strengthen the Mathematics and Science reform.

Positive student outcomes are "the main reason for being" of student-centered systemic educational reforms. The central focus of most systemic educational reforms is the achievement of challenging academic standards by all students that can be demonstrated through improvements in student academic achievement. Student academic achievement is interrelated with aspects of the initiatives such as their visions of quality education, expectations of performance for participants, definitions of equity, and designs of professional development interventions among others. Further, student academic achievement is a concrete indicator of progress that is associated with other areas of student success such as college and job placement. Thus, evaluators of systemic educational reforms are often expected to provide evidence of having an impact on student academic achievement as an indicator of the value added by the reforms choosing an appropriate data collection and reporting design that meets the needs of the initiatives and of their multiple stakeholders.

Within the context of systemic educational reforms, student outcomes extend beyond student academic achievement. Participant variables such as course enrollment, college placement, and job placement as well as involvement and quality of performance in activities such as Science Fairs and Mathematics Olympics can be used to examine trends or changes in student achievement that reflect student academic achievement beyond test scores and course grades. Further, evaluators of systemic educational reforms may be interested in looking at variables such as attitudes towards Science and Mathematics and student empowerment as indicators of the reform's impact. The following section presents some plausible alternatives to measure these variables within evaluations of systemic educational reforms.

Some Methodological Alternatives in Systemic Educational Reform Evaluation

Because of the complexity and dynamic nature of systemic educational reforms, a research approach is proposed as an alternative to measure and document outcomes. The scarcity of literature available on evaluation of systemic educational reforms could motivate evaluators to contribute to the development of an emerging field of research particularly since the visions of what evaluation is, what evaluation should be, and what evaluation will be are constantly changing. A research approach to evaluation could also provide enough flexibility to evaluators and reformers to reformulate the evaluation questions and redesign the evaluation as the information needs of the program evolve.

A research approach to evaluation will be more methodologically sound if the variables of interest are measured in multiple ways. By comparing findings using multiple qualitative and quantitative data collection strategies as suggested in the

literature (Laguarda, Goldstein, Adelman, & Zucker, 1998), evaluators can identify trends and lead reformers to make pertinent mid-course corrections within the reforms. Combinations of qualitative and quantitative data collection strategies (Mark, Feller, & Button, 1997; Hedrick, 1994; Reichardt & Rallis, 1994; Yin, 1994) to look at student achievement and the use of internal and external tests to look at variables such as student academic performance are examples of these multiple approaches discussed elsewhere (see Dávila & Gómez, 1994;1995; Dávila, Gómez & Vega, 1996; and Dávila, 1999 among others for specific examples).

The diverse dimensions involved in the evaluation of systemic educational reforms may lead the evaluator to envision the evaluation as a series of coordinated studies where each one is designed to answer specific questions. Each one of these studies could provide valuable insights into some aspect of the educational reform while all of them together could provide those insights into the overall reform and its effects. Such studies could be conducted on sub-systems, reform issues, or local contexts as they are discussed in the book that serves as the foundation of this paper. Each one of these studies will present its unique challenges to evaluators who may need to start thinking about to structure them in a way that the information that they yield is meaningful.

Final Comments: Using Outcomes to Drive Systemic Educational Reform

The identification and definition of outcomes of systemic educational reforms clearly reflects what is valued by the reform at a particular point in time. By selecting what will be measured and how it will be measured, evaluators and reformers are explicitly defining what is important for the reform because we usually measure what we value. Thus, by defining outcomes and measuring those outcomes, evaluators and reformers will be driving the reforms.

References

Caracelli, V.J. & Greene, J.C. (1997). Crafting mixed-method evaluation designs. New Directions for Evaluation, 74, 19-32.

Chinoy, E. & Hewitt, J.P. (1975). Sociological Perspectives (3rd. Ed.). New York: Random House.

Datta, L. (1994). A pragmatic basis for mixed-methods designs. New Directions for Evaluation, 74, 33-46.

Dávila, N. & Gómez, M. (1994). Assessment of the impact of a new curriculum on systemic change. Paper presented at the AERA Annual Meeting, New Orleans, Louisiana. ERIC Document 390 907.

Dávila, N. & Gómez, M (1995). Evaluation of school-based regional dissemination centers as scale-up mechanisms for systemic educational reform in Science and Mathematics. Paper presented at the AERA Annual Meeting, San Francisco, California. ERIC Document 310 702.

Dávila, N., Gómez, M., & Vega, I.Y. (1996). Evaluating the transformation of the teaching/learning culture of schools involved in systemic Science and Mathematics educational reform. Paper presented at the AERA Annual Meeting, New York, New York. ERIC Document 395 803.

Dávila, N. (1999). Assessing student outcomes. Paper presented at the Fourth Annual Forum of the National Institute for Science Education.

Federico, R.C. (1975). Sociology. Reading, Massachussetts: Addison-Wesley Publishing Co..

Gómez, M. (1997). A first cut at a pragmatic theory of systemic reform. Presentation at the National Science Foundation's Systemic Initiatives Principal Investigators' and Project Directors' Bi-Annual Meeting, Washington, D.C..

Hedrick, T.E. (1994). The quantitative-qualitative debate: Possibilities for integration. New Directions for Program Evaluation, 61, 45-52.

Laguarda, K.G., Goldstein, D.S., Adelman, N.E., & Zucker, A.A. (1998). Evaluation of the National Science Foundation's Statewide Systemic Initiative (SSI) Program. Assessing the SSI's impact on student achievement: An imperfect science. Menlo Park, CA: SRI International.

Mark, M.M., Feller, I., & Button, S.B. (1997). Integrating qualitative methods in a predominantly quantitative evaluation: A case study and some reflections. New Directions for Evaluation, 74, 47-60.

Reichardt, C.S. & Rallis, S.F. (1994). The relationship between the qualitative and quantitative research traditions. New Directions for Program Evaluation, 61, 5-12.

Remmling, G.W. & Campbell, R.C. (1970). Basic Sociology: An introduction to the study of society. Totowa, New Jersey: Littlefield, Adams, & Co..

Weiss, C.H. (1998). Evaluation: Methods for studying programs and policies. Upper Saddle River, New Jersey: Prentice Hall.

Yin, R.K. (1994). Evaluation: A singular craft. New Directions for Program Evaluation, 61, 71-84.

Zucker, A.A. & Shields, P.M. (1998). SSI Case Studieş Cohort 3: Arkansas and New York. Menlo Park, California: SRI International.